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Petroleum Lubricating Oil Works.

We take the following article from the San Francisco *Daily Call* of April 4th: A few days ago, we visited the Petroleum Oil Works of Messrs. J. H. White & Co., at No. 109 Commercial street, and were shown over the establishment by Mr. White, who imparted to us a great deal of information relative to the resources of California as an oil producing region, and the uses to which the oil could be put. A region of land in the vicinity of the Old Mission of San Buenaventura, in Santa Barbara county, extending nine miles in width and twenty-nine in length, was producing large quantities of oil—some of the springs as much as fifty barrels per day. The strata of rock laid in such a position that the oil could not be obtained by boring, but those working the springs had discovered that if they tunnelled into the hill they could get an unlimited amount of oil and an inexhaustible supply. Already had over 10,000 barrels been taken out by the three companies engaged in the business, and the prospects were that that amount would be more than trebled during the present year. Mr. White had found in his efforts to purify this oil that it possessed many qualities hitherto unknown. Besides burning fluid, he had succeeded in extracting two varieties of lubricating oil which was far superior to anything heretofore offered to the public, and which has just begun to attract the attention of machinists and steamboatmen, and the Oakland boats, and many of the foundries were using the new oil, declaring that they would use no other kind so long as they could obtain this sort. He had also obtained an article which he called butryal—which contained 40 per cent. of water infiltrated with 60 per cent. of oil—that resembled butter. At first this was thrown away as waste, but he accidentally discovered that it made the best axle-grease known—the water in the oil from friction, forming into globules and keeping the journals cool and even-tempered. Another article discovered was eupion—an article of a very inflammable character—which possessed the power of removing all sorts of stains and grease spots without leaving any disagreeable smell; in fact, it evaporates with great rapidity, and in a few moments you could not discover the slightest trace of it. Another article was a crystalized carbon, which burned with great freedom and gave out great heat, and which will one day figure largely in this market as a cheap and compressed fuel—for one ton of this is equal to five tons of the best known coal. The works of Messrs. White & Co. are well worth a visit from the scientific man, and even the curious man would find there enough to afford him food for thought for several days.

PRODUCTS OF OIL.—The production of the Venango Oil Region for the year 1866, according to the most reliable data to be had, amounted to two million five hundred thousand barrels of forty gallons each. This amount at three dollars per barrel, which would be a small average, would make the aggregate proceeds from Venango petroleum foot up $7,500,000—which has been added to the wealth of the country.

Archimedean Screw Ventilator.

The subject of ventilation has never received the attention which its importance to health and comfort imperatively demand. Pure air is as necessary to the human constitution as wholesome food; the Sanitary

VENTILATOR FOR BUILDINGS WHERE PURE AIR IS REQUIRED.

Commission affirms that without a good supply of pure air the best food will neither give health or strength. To provide a constant supply of fresh air in Churches, School Houses, Hospitals, Factories, or any place where the sickly, suffocating odor arising from respiration and constant exhalation of moisture from the pores of the skin, in crowded assemblies, or in our public conveyances—cars, ferry boats, or steamers, is what has long been needed and sought to be attained by various shapeless contrivances and almost useless inventions, but has never been fully accomplished until the introduction of GRIFFITH'S PATENT ARCHIMEDEAN SCREW VENTILATOR, this will accomplish the object—it has

For Smoking Chimneys.

proved an unparalleled success, and late improvements have made it perfect in its mechanical construction and operation. It is claimed to be the only Exhaust Ventilator ever invented. In addition to its usefulness it is highly ornamental.

Numerous testimonials have been received, which go to show its remarkable efficiency and usefulness in all places where a cheap and effecive ventilation is needed, or where smoky chimneys need a radical cure.

This Ventilatar is a positive cure for imperfect draught, and is unquestionably the best invention ever applied for this purpose, as many who have used them are happy to testify.

The engravings herewith show the form and operation of the invention. It consists of a screw suspended within a conical tube, centered upon an imperishable substance, moving without noise, and being hung so delicately that the least breath of air will cause it to rotate, upon the principle of a tide wheel or a wind tester for measuring the velocity of the wind, by having the arms or buckets so arranged as to be acted upon by the wind on one side of the centre of rotation only. Hence rotation is produced by a current of air, moving in any direction. By this contrivance draught is a necessary effect. Applied to chimneys the smoke *must* ascend; applied to the airing of rooms ventilation is *inevitable*. The "Archimedean Ventilator" can be adapted to any description of buildings.

They have been used and thoroughly tested during the past three years in Philadelphia and vicinity, and have given great satisfaction. They have been more recently introduced in New York by the AMERICAN VENTILATION COMPANY, who have purchased the Patent for all the States and Territories of the Union, excepting the New England States, where they have been introduced and used with great success.

The American Ventilation Company are now manufacturing their own goods under the supervision of the Patentee, and are prepared to fill all orders at short notice.

Parties desirous of further information may address the American Ventilation Company, No. 16 Courtlandt street, New York.

SIZE OF THE EARTH.—Some very curious speculations have lately been put forward by M. Dufour, concerning the increase in size of the earth. Will it be believed that our globe is increasing in size year by year, owing to the quantity of meteors (falling stars) which are projected into it from the regions of space? M. Dufour has made calculations showing that the earth sustains an annual increase equal to 114,400,400ths of its weight. It appears that nearly two cubic metres of meteoric dust falls upon every acre of the earth's surface in the course of a single year. It is stated that in England this meteoric dust may be found in accumulations nearly a foot deep.

—There are thirty iron manufactories in Chicago, several of which are almost exclusively engaged in preparing railroad iron, and altogether they do a business amounting to $2,500,000 a year.

[FROM THE NEW YORK HERALD OF MARCH 15.]

Croton Water.

Its Reckless and Useless Waste—How it Occurs—Facts as to the Consumption of Croton—Will the Supply be Sufficient for the Increase of Population?—Remedial Measures a Necessity—New Works Contemplated by the Croton Board, &c.

[Concluded.]

There are many ways by which the bulk of our supply of Croton finds its way into the sewers that are not known to the mass of the people; but there are others apparent everywhere, and noticable on every hand. A few of these we subjoin.

First—The general method of plumbing in first class houses is the cause of an immense loss of water. In residences where both hot and cold water is used, the faucets for the emission of each are generally connected in the kitchen with the same leader pipe over the sink or drain. The hot water imparts heat to this leader pipe to such a degree that when the cold fluid is desired for drinking or other purposes, it is customary to open the faucet and allow from two to three pailfuls to run off in order to obtain a tumbler or pitcherful cool enough to quench the thirst.

Second—Allowing water to flow through the pipes almost continuously in winter in order to prevent the freezing of the conduits is another fruitful source of waste.

Third—The extravagant waste in water closets and urinals. It is well and even necessary that proper regard should be paid to the cleanliness of these places; but it is the extravagant and unnecessary use of water, far exceeding what is necessary for sanitary purposes, against which complaint is made. In some cases, especially in large hotels, &c., where the water is allowed to run all the time, it is estimated that enough is wasted in this manner, rating them at nine thousand gallons per day, in each instance, to afford a supply to one hundred and nineteen families. Now, supposing there were this useless waste in 5,555 cases, nearly the whole daily supply of Croton would be totally lost.

Fourth—Another source of loss is the practice so much in vogue of cooling steamboat boilers by letting out the hot water while cold water is being introduced at the same time.

Fifth—The sprinkling of the streets in the summer time. Vast quantities of water are wasted in this way. Were people obliged to pay in proportion to the amount used they would be apt to cease flooding the streets after the dust is once fairly laid. As matters now are, however, the streets are flooded until the dust is fairly turned into mud. In this connexion, also, may be mentioned the unnecessary waste of water by servants and others in the washing of windows. If the head of the family were charged for this waste care would be taken that no more water were used than is necessary for the purpose of cleanliness, in the same manner as householders are careful to turn off the gas when bed time arrives and its being consumed no longer than is requisite.

Sixth—An immense amount of water is wasted wherever buildings are being erected. Owing to the fact that builders and superintendents have fallen into the usual laxity as regards this matter, laborers are allowed to use water *ad libitum* in the mixing of mortar, &c., and not only is this the case, but, as may be noticed in any locality almost where mortar is being made, the service hose, when not actually employed in feeding water for slackening the lime, is thrown carelessly aside without the stop cock being closed, its nozzle generally resting on the curbstone and permitting the fluid, of which it is the conduit, to run in the street gutter, whence it finds its way speedily to the nearest sewer.

Seventh—The recklessness with which water is used in livery stables, notwithstanding the provisions of the ordinance bearing on the subject, is very largely complained of. The parties engaged in these places make no secret of washing carriages by allowing the water to cleanse them from a hose pipe, and even after the vehicle is fully washed, the rinsing it receives in this manner uses up a fearful amount of Croton.

Eighth—There is much waste in manufactories, breweries, distilleries and such like establishments, owing to the fact that superintendents and proprietors pay no attention to the uncalled for lavishness with which the water is used. In many cases where the vats and tanks have sewer connections, the faucet of emission is invariably open when the vats are not used, and the Croton is constantly running into and through them, just as if it were determined to see how much of the precious fluid could be squandered without the least cause or excuse.

Ninth—Allowing water to go to waste merely for the amusement of children is sometimes practiced. Boys congregate in the yard of a dwelling, attach the hose to the hydrant, and, with the full knowledge of their parents, "play firemen" with much gusto, while perhaps the very *pater familias* with whose consent the sport is carried on is complaining that the supply in the third story of his house is lamentably insufficient.

Tenth—Cases are known where public water has been used as a motive power. These instances are not very numerous, it is true, and may not go for much in making up the general account of waste; but we allude to them merely to show the fact that the laxity of which complaint is made prevades every class and condition of society.

We might mention other cases of waste, but the above are enough to give an idea of the condition of things, and to put the water police on the *qui vive*. Any reader of the HERALD who seems so disposed can add to the list of causes of waste by keeping his eyes about him while preregrinating through any portion of the city.

It may be that the most disastrous results will follow this lavish and useless employment (or rather non-employment of Croton. Accidents sometimes happen, no matter how much care may be taken to guard against them. It is not long since that the city of Boston was for many days almost entirely deprived of its water supply in consequence of the bursting of a large conduit attached to the Cochituate works. And in this city we have had instances of a similar, though not so extensive, a deprivation. On the night of December 5, 1860, two of the large main conduits in Fifth avenue that bring the water from the receiving reservoirs, burst about the same time, and two-fifths of the supply went to loss in consequence. Only a few days before the Croton Department had determined to lessen the supply, in order to make some necessary repairs to the acqueduct, but fortunately the matter was afterwards postponed for a time. Meanwhile the accident to which we refer took place. Had the repairs been commenced at the time first suggested the city would, for forty-eight hours at least, have been served with only one quarter of the usual amount. Any one can easily perceive that, to say nothing of the inconvenience this would have given rise to, a conflagration breaking out at this juncture of affairs would have caused a destruction fearful to contemplate.

As a matter of interest in this connection we subjoin a statement of the percentage of population using public water to any great extent in the cities of the Union, and also the number of gallons served to each inhabitant of the same. This statement is taken from the reports of the Water Department for each city for the year 1860. It will be observed that in that year the average supply for each inhabitant in New York was 37 gallons; it is now about 60 gallons nearly double, the enormous increase of which is attributable almost entirely to the fearful waste to which we have alluded.

1860	*Gallons per Inhabitant.*	*Percentage of Inhabitants Using Water.*
New York	37	56
Baltimore	23	53
Boston	100	90
Hartford	34	100
Cincinnati	24	48
Brooklyn	17	30¼
Buffalo	63	28
Louisville	9	12½
Cleveland	16	16½
Detroit	41	78

It may be truly said that the present means of supply are ample to furnish each inhabitant with even twice the amount necessary for all legitimate purposes if the consumers would use proper measures to prevent loss; but when the taxable community is asked to pay inordinately for erecting works and acqueducts on the upper Hudson and the Housatonic merely to furnish facilities for useless waste it becomes a different thing altogether, and the public may very well be led to put the query, made proverbial by the late Artemus Ward, "Why is this thus?"

Before closing it may be well to mention that a reform is needed in the matter of collecting water rents. The power of establishing water rates should be vested in the Croton Board; for, as matters now stand, those who consume the most pay the least proportionate share of the tax. There are two ways by which the water rent is now collected. One, in accordance with the provisions of the State law, by which a levy is made in accordance with the number of feet front and of the stories of the building, no regard whatever being paid to the amount used therein. The other called "extra rent," is by ordinance of the Common Council under which the water can be cut off by non payment. As well might the tax be levied in accordance with the color of a building or the style of the furniture therein as by the present mode; for a house of three stories may contain one family of six, or ten families of ten each; and of course more or less water may be used as these numbers may vary though the building and the tax remain the same in each case. Let a reform be introduced in this matter forthwith, for it is most earnestly required.

Important Communication Concerning Gas!

From H. W. FITCH, Secretary of the Gas Company.

A Full and Complete Answer to the General Complaints made against the Company—Interesting Statistics.

In a majority of cities, where gas is sold at $5 or less, meter rents, etc., are collected, quite sufficient to swell the receipts to about an average of 50c. per 1,000 cubic feet over the rate charged on the item of gas. Without reference to the price charged elsewhere, the price here is lower than that of nearly any other article of common use, as compared with prices before the war, say in 1860. For instance, the price of gas was then $3.50 per 1,000, and is now sold at $5.50; rate of increase, 57 1 7 per cent. Coal was then sold at 50 cents per barrel; is now sold at $1.15, and, until very lately, at $1.50; rate of increase, 120 per cent., and, until very recently, 200 per cent. Flour and sugar have each increased 200 per cent.; bacon, beef, fresh meats, butter, eggs, poultry, and fruits have all increased in price 100 per cent. Boots, shoes, hats and clothing generally have advanced 100 per cent., lime at the rate of 133⅓ per cent., and ordinary labor just 100 per cent. Coal oil is the only article of common consumption that is cheaper than it was six years ago, and, while every article upon which the cost of gas depends has increased from 100 to over 300 per cent., the price charged for it has advanced from its very lowest rate but about 57 per cent., and it is now, with but a single exception, comparatively the cheapest article of ordinary use enjoyed in the city.

We may say, however that it is the determination of the Directory of the Company to reduce the price whenever coal, lime and labor shall decline, and the abatement, when made, will be in proportion as its cost may be lessened by such decline in the price of materials, etc. In dismissing the subject of complaints, allow us to remark that there are, of course, thousands made that to the officer and clerk fully understanding the business, and conversant with the possibilities in the case, would seem frivolous, and in many instances ludicrous, but for the apparent earnestness of the complainant. We may also state that every city has some, this city fortunately but few, who are chronic grumblers on the subject of gas. They never see a bill, pay one, hear or speak of the matter, without grumbling, and who show a parallel persistency in nothing else, save a dogged determination to neither learn anything about it or of abandoning its use; generally, too, this class of consumers are, on their own account, a source of actual loss to the company, as their limited consumption does not pay the expense of measurement and collection.

Of course, in a business of such magnitude some mistakes are made, but these are promptly rectified when discovered. Meters may, and do occasionally, through accident or misuse, stop the supply of gas, leak, and get out of order in some other way. Complaints being made they are immediately attended to, and it is the pecuniary interest of the company to hear and correct irregularities of this character.

The company demands of its representatives courteous attention to all complaints of and business with consumers, and a firm, impartial execution of its rules. Not a stockholder in it but desires that exact justice shall be the character of every transaction. It is with pleasure we inform you that at no time within many years past has there been fewer complaints than at present.

PUBLIC LAMPS.

Your next inquiry requsst information on the subject of public lamps, and generally any suggestions we may desire to make in relation thereto, stating that at times they burn dimly.

An exceptional post may occasionally be seen any night that burns dimly, and in such cases the deficiency of light is owing to local defects—to causes confined to that particular post. Its service pipe may have become bent by a breakage in the street gutter under which it passes; the burner may have been defective, or some other local fault prevents a good supply at that point; and these cases are repaired as soon as they are discovered by the company, or reported to it. In very cold and frosty weather many of the lamps cannot be lighted, and those that may, burn but dimly. The reason of this is simply because much of the supply pipe is exposed to the cold temperature of the weather, it having no other protection than the thin cast-iron shell of of the post. The inside of the service pipe becomes coated or filled with hoar-frost, excluding in part the usual flow of gas, or, perhaps, cutting it off entirely. The use of alcohol, by pouring it down the service, is the best remedy in such cases. In more northern latitudes the pipes are protected by being closely wrapped or coated with rope or other material, and with all care,

in extreme weather, it is not uncommon that their lamps burn dimly, or that more than one-half of them cannot be lighted. Here we seldom have more than a few nights in the year weather sufficiently cold to produce the result complained of, and the extra expense of wrapping the pipes, or generally of using alcohol, would hardly be warranted. This winter, you will remember, has been more than usually cold, and the lamps have been more affected than in other seasons.

LANTERNS SHOULD BE CLEAN.

A frequent cause for an apparently dim light is found in the fact that the glass in the lantern is not clean or clear. With unpaved and dusty streets, the desired condition cannot at all times be maintained, though the lanterns were washed every day; yet more attention in this respect would be of great benefit. They have not for years been washed or cleaned, excepting only the attention gratuitiously given by the lamplighters. It is not their duty or that of the gas company, to clean the glass. The city should provide the means for having them regularly cleaned and kept as clear as may be possible, or otherwise not complain that they are dim or unclean. Many of the lantern-frames now in use are cast-iron, old, unpainted and corroded. When it rains the rust softens and runs down over the glass, and in many instances so stains it that it cannot be again made clear. New lanterns of tin are being used, without being painted, and of course will soon rust out. It would be a matter of economy to have them all well painted for their preservation from rust.

HOW LANTERNS SHOULD BE MADE.

Most of the lanterns in use are so badly constructed that in any thing of a stiff breeze, the light was blown out. Less than a week since, more than two hundred were blown out in the course of an hour, and the atmosphere in their vicinity was impregnated with the escaping gas for the balance of the night. Next day it was erroneously reported and published that the lamps were not lighted. Each lantern should have a tin bottom sufficiently perforated for the purpose of ventilation, yet so close as to prevent the lights from being blown out by sudden gusts of wind. One pane of glass in the side should be hung on hinges, as a door, through which the gas may be lighted or extinguished, and the inside of the lantern washed. This method, if pursued, would be found much more satisfactory and economical than the present, as the breakage of glass in cleaning lanterns would be much less.

The supply of gas to the public lamps of Memphis is much fuller than is furnished in some other cities, from the fact that here they are supplied from the same mains, and at the same pressure, as all other consumers; while in many cities they have separate and special mains for lamp posts only, and can supply them at a reduced pressure, without affecting the supply to other consumers. To reduce the pressure on the lamp-posts in this dity, would involve a corresponding reduction to every consumer, and it would be cheaper for the company to supply the lamps gratuitously than by such means to attempt to reduce their expense.

HOW PUBLIC LAMPS SHOULD BE LOCATED.

It is sometimes remarked that "Memphis is badly lighted;" and this is true. There is no city in this country using as much gas per post as here; but many cities are better lighted, because they have more posts to each mile of street, and have them distributed with greater regularity. It is difficult to imagine the possibility of placing lamp posts more irregularly than they have been located in some portions of this city—at times all on one side of the street, then irregularly alternating. Two parallel street corners with a lamp in each, and the opposite parallel corners without any, as, for instance, the corners of Poplar and Third streets, and in other locations. If there be but two lamps at the crossing of streets, they should be placed on diagonal corners.

This zigzag condition of the lamps now in use is easily accounted for by the manner in which they have been located, which has been, usually, much as follows, to wit: The Gas Light Company having extended its main on some street, the residents on it petitioned the Board of Aldermen for public lamps; the Board granted the request, and ordered some one to have them delivered and put up. When the exact location of each post was to be decided, it has too often been determined by the personal regard of the Street Commissioner, (or other officer charged with the duty) for some of the residents who desired lamps in front or near their houses. The location of each post should be determined with skilful oversight as to its relative position to other posts, when the entire district shall have been fully supplied. In compliance with your request, we beg to suggest that the Board of Aldermen, or your Committee, should determine the distance from each other at which posts should be placed; and instruct the City Engineer to mark on the official plat or map of the city the precise locations at which lamp posts shall be placed on all the streets and alleys, whenever they shall be lighted.

Thus would be determined with regularity not attainable by any other method, the precise locations of all the lamps it is deemed necessary for the city to have within its present limits; and the future position of a lamp-post would be as well known as the direction and width, or anything else connected with the streets and alleys. The locations being determined, they could be indicated on the map by a small open circle (thus °), and when the post should be erected the open space of the circle should be filled up (thus •). Under this system the plat or map would show at a glance all that could be asked of the Board, in reference to the location of street-lamps. A general resolution ordering the erection of lamps in accordance with the locations designated on the map, whenever any street or alley should be supplied with a gas main, would at once relieve the Board and your Committee of this onerous portion of their and your duties, and secure perfect regularity in the distribution of your public light.

There is occasionally just reason for complaint against the company on account of irregularity in lighting the lamps, and that sometimes lamps are omitted by the lighters. Such complaints are at once attended to, yet it is found nearly impossible to secure faithful, reliable and careful attention from the class of labor necessarily employed in such service. The company does all it can, and leaves untried no reasonable means known to them of securing satisfactory execution of this as well as every other covenant or agreement they have entered into with the city.

The officers of the company, to whom your very polite communication is addressed, beg leave to present the thanks of the company to the present Board of Mayor and Aldermen for the unusually courteous consideration with which they have treated our respective relations, and personally to yourself for your elaborate and most respectful letter of inquiry. Trusting that our correspondence may alike advantage the city and the company, we have the honor to be,

Very respectfully,
Your obedient servants,
JAMES M. WILLIAMSON, Pres.
WM. H. FITCH, Jr., Sec'y.

Mines of Oregon and Washington Territory.

In the general review of mining operations for 1866, on the Pacific Slope, in the *Mercantile Gazette and Price Current* of January 9th, we find the following in relation to the mines of Washington Territory and Oregon:

"But little of moment would seem to have been accomplished the past year in Washington Territory. In the early spring quite an excitement prevailed, being a revival of that extant the previous year, in regard to rich diggings having been found about the Big Bend of the Columbia, in what is known as the Kootenai country, and an emigration carrying some several thousand miners set that way. But late accounts seem to indicate that the season has failed to turn out propitious to Kootenai, the greater part of these adventurers having left, with but moderate earnings, for more genial regions, the winters there setting in early. The total amount extracted from that district for the current year is estimated at abont $400,000, being the earnings of some five or six hundred men. Rumored discoveries of gold having been made in the Cascade range, about Fort Colville and elsewhere in this territory, have from time to time obtained currency, but they appear to have rested on a rather slight foundation, no discoveries in this line worth recording having happened, and the yearly bullion product of the country being very inconsiderable. The placers of Oregon make a better exhibit than those of her Northern neighbor, the diggings on John Day River alone being set down for $1,500,000, with smaller but very respectable contributions from other mining quarters. About Althouse and Jacksonville the diggings, long distinguished for their munificent returns, continue to uphold their ancient reputation, further discoveries of paying ravines being occasionally made. A rich and extensive placer deposit has recently been found in this vicinity, being situate upon an old seabeach formation, now elevated some three hundred feet above tide water. It is near the mouth of the Coquille River, and about forty miles north of the famous Gold Bluff, of speculative memory, now the scene of some feeble beach washings, carried on by a small company of men whose labors, though fairly rewarded, seem but a sorry representation of the grand expectations that were entertained of this spot at an early day. While there are many valuable quartz veins in this section of Oregon, several of which have been made to pay well, worked with arastras, the attempts at developing this species of mines in the Santiam District, situated in Cascade range further North, have issued in disappointment, the rock crushed failing to pay, but whether because of its poverty or intractible nature has not yet been determined to the satisfaction of parties most interested."

On the Igniting Point of Petroleum.

BY JOHN ATTFIELD, Ph D., F.C.S.,
Director of the Laboratory of the Pharmaceutical Society of Great Britain.

(Concluded)

And now, with regard to a method of taking the igniting-point of petroleum vapor, which shall be reliable and constant in the results of its application.

As petroleum is not a definite chemical compound, but a varying mixture of several hydro-carbons, as, in short, it has no constant chemical or physical property of which a ivantage might be taken in devising a ready method of taking igniting points, it follows that the method selected must be more or less arbitrary, empirical, conventional. It is true that their volatility is a constant physical property, and MM. Salleron and Urbain, in France, have, it is said, contrived an apparatus for taking the tension of the vapor of mineral oils which is obviously proportional to their volatility, adopting 64 milimetres of water at apparently 35° C. as the limit of safety; but only an abstract of their paper was published in the *Comptes-Rendus* of January 2, 1866; their full paper does not seem to have been printed, so that I am unable to judge of the merits of the method. It has not the recommendation of being a direct process. The only feasible plan would seem to be, to select a direct method, simple in principle, easy of execution, occupying little time in performance, and inexpensive; and when this is found, to take steps for accomplishing a far more difficult task—namely, securing its universal adoption. Now the ignition method is sufficiently simple in principle; but from the foregoing and many other experiments, I would advise the rejection of its application in an open dish, saucer, or bowl. Even if this experiment could be similarly performed under constant conditions, which is impossible, the rapidity with which vapor escapes from the surface of the liquid renders a thermometric reading, taken under the experiment, an unfair indication of the temperature at which inflammable vapor would be given off from the petroleum in a lamp or other closed or partially closed vessel. Of course, experiments made without a thermometer are not sufficiently delicate for the purpose of the analyst. Again, the petroleum must not be heated in a common bottle, on account of the great liability of the latter to fracture; nor is it necessary to use a vessel contrived for violently agitating the oil and air together. But if the bottle be substituted by a short, wide tube of glass, thin, so that it can be heated with safety—by, in short, a rather wide variety of the common test tube of our analytical laboratories; then, if equal quantities of petroleum be operated on, the liquid be fairly well stirred and shaken, and the test flame be always introduced to the same distance from the surface of the liquid, constant results may be expected. The same tube may be used in which to insert a hydrometer to take the specific gravity of the oil and thus, with a naked thermometer somewhat longer than the test tube to act also as a stirring rod, we have a compact and inexpensive apparatus. These articles have been made for me by Mr. Casella, the well known physical instrument maker of Hatton-garden; he has included them all in a neat pocket case, introducing a small spirit lamp also; but I need not say that the petroleum test-tube may be heated over a gas flame, by partial immersion in a vessel of hot water, or by any other convenient plan. Half-way up the test-tube is a mark indicating the amount of petroleum to be operated on. The test flame should be introduced to within half an inch of the surface of the oil.

I will conclude by giving detailed directions by which to take both the igniting point and specific gravity of a specimen of petroleum or paraffin oil. Into a test tube of thin glass 6 or 6½ inches long, and 1½ inch in diameter, pour the liquid until the tube is half full. Stir the liquid well with a naked thermometer, having the usual degrees marked on the stem, shaking also so as to keep the upper part of the tube well wetted with the liquid, and note the temperature. Now introduce a flame (of a thin splint of wood, or, far better, a small gas flame a quarter of an eighth of an inch long) into the mouth of the tube to within half an inch of the surface of the

liquid, quickly withdrawing it, and noticing whether a thin blue flame runs between the test-flame and the surface of the oil. If not, warm the tube by passing the bottom of it gently through a spirit lamp, or other flame, or by dipping the lower portion of the tube into hot water, constantly stirring the liquid with the thermometer, frequently noting the temperature, and introducing the test-flame every minute or so. The temperature at which the thin blue flame appears will be the igniting point of the petroleum, the point at which it gives off inflammable vapor. To correct this result, let the tube gradually cool, introducing the test-flame as before. The lowest temperature at which the vapor takes fire is the true igniting point. To ascertain the specific gravity, pour the petroleum or paraffin oil into the test-tube, until the latter is about three-fourths full; insert a thermometer, and warm or cool until the temperature is about 60 degrees*; now immerse the hydrometer, and take care that it fairly floats in the liquid; the point on the stem of the hydrometer, cut by the under surface of the liquid, will be the specific gravity. A copy of these directions will be found in the case, as sold by Mr. Casella.

This particular hydrometer might be termed a petroleometer; that name would, however, perhaps best designate the whole box or set of articles. The most accurate method of taking specific gravities is of course the specific gravity bottle; but a hydrometer, if well made, gives, I find, numbers varying not more than one degree feom those of the bottle, while its use involves far less trouble and expense.

As an indication of the extent to which confidence can be placed in an igniting point of petroleum, taken in the manner recommended, I may state that two different observers, experimenting at different times on three different specimens of petroleum placed before them without distinguishing marks, gave iguiting points in which the greatest limit of variation was one degree. It would doubtless be easy for an analyst, by processes of fractional distillation, to obtain even from safe petroleum, vapor that would be inflammable at 60° Fahr., or even at freezing temperatures; but it would be absurd to regard such petroleum as dangerous, or to use such a fact as evidence of the weakness of any method of determining the igniting point of refined petroleum. What I claim for the method above described is, that it accurately shows the temperature at which petroleum, as used by the public, is dangerous. It surely is not too much to expect that the method will be adopted by the trade, and that no mineral oil will be supplied to the public unless guaranteed to give off no inflammable vapor below 100 degrees of Fahr. thermometer. Only by some such means will explosions in lamps, etc., be avoided—explosions which are always alarming, frequently the cause of loss of property by fire, and occasionally resulting even in loss of life.

* Five degrees of temperature make about one degree difference of specific gravity. At 70° Fahr. an oil will be about two degrees lighter in specific gravity than at 60° Fahr., and at 50° Fahr two degrees heavier.

THE FIRST GOLD MINE.—The first piece of gold found in the United States is said to have been found in Cabarrus county, North Carolina, in 1799. It seems from the account furnished Mr. Wheeler, by Col. Burnhandt that a boy named Conrad Reed went with his sister and younger brother to a small stream called Meadow Creek on a Sunday, and while engaged along the banks of the stream shooting fish, he saw a yellow substance shining in the water, which he picked up and found to be metal. He carried it to his father, and showed it to William Atkinson, the silversmith of the village, who was unable to tell what it was. It was taken home by Mr. Reed, and being the size of a small smoothing iron, it was used as a weight against the door to keep it from shutting.

In 1802 he carried it to market at Fayettville, where a jeweler pronounced it to be gold, and melted it, producing a bar six or eight inches long. The jeweler purchased it for $3 50, a "big price" as Mr. Reed thought. Upon subsequent examination gold was found upon the surface along Meadow Creek, and in 1803 a piece of gold was found in the stream that weighed 28 pounds. Several other pieces were found varying from 16 pounds to the smallest particles. The vein of this mine was discovered in 1831. The annual products of the gold mines of North Carolina are stated at $500,000 The product of the Cabarrus mine in 1840, is estimated at $3,500.—*Alpine Miner.*

The Process of Roasting Ores.

Translated from the German of F. Plattner, for the MINING & PETROLEUM STANDARD AND AM. GAS-LIGHT JOURNAL, by

J. H. TIEMANN.

[Entered according to an Act of Congress, in the year 1866, by Bryant, Callender & Co., in the Clerks Office of the District Court of the United States, for the Southern District of New-York.]

NUMBER XVII.

As pure disulphide of copper is seldom roasted in the large way, occurring usually in combination with other sulphides, and as the best copper matte always consists of a combination of mCu^2 FeS, the question may here arise—does the admixture of sulphide of iron exercise any influence in changing the disulphide of copper to a protoxyd? It has been already shown that when simple sulphide of iron is roasted by itself at a low heat, it changes for the most part to free sesquioxyd and a little protosulphate, and the latter, in consequence of the increase of temperature caused by oxidation, changes first to persulphate and then to free sesquioxyd, sulphuric acid being set free. In consequence of this deportment the above question may be answered *a priori*, that an admixture of sulphide of iron is not only not detrimental, but must tend to accelerate the roasting of the disulphide of copper, because the sulphuric acid from the persulphate of iron assists the oxidation; this statement is corroborated by experience in roasting in the large way.

When argentiferous copper matte is to be roasted in a reverberatory furnace, for the conversion of the iron and copper into free oxides, and the silver into a sulphate for treatment by the Ziervogel process, all the conditions must be fulfilled by which this is in general possible, and among these are

a. That the matte shall be as free as possible from sulphurets which either change to sulphates, and in this condition are inclined to sinter, enclosing particles of silver. This is especially the case when the ore contains a large amount of Galena, or such sulphides as are changed to acids after the sulphur has been driven off, and in contact with the sulphuret or sulphate of silver (so long as no sulphuric acid is set free from the sulphate of copper) form salts which are insoluble in water. This is the case when the ores contain any quantity of sulphide of antimony or arsenic, and the salts thus formed are not decomposed by the sulphuric acid which is afterwards set free.

b. That the matte shall be as finely pulverized as possible.

c. Properly constructed reverberatory furnaces, in which the temperature may be increased or diminished at will.

d. That when the heated gaseous products of the fuel enter the roasting chamber, they must be free from reducing gases or sooty particles, otherwise suboxyd of copper and magnetic oxyd of iron are formed which have a reducing effect on the sulphate of silver formed during the roasting, and in the subsequent solution of silver a precipitation of metallic silver by the suboxyd of copper is unavoidable.

e. That the roasting shall only be carried so far, with a gradually increasing temperature, that the sulphate of copper (which is decomposed at a temperature slightly below that requisite for the decomposition of sulphate of silver) is almost entirely changed to free oxyd. This must be controlled by frequently taking samples from the hottest part of the furnace, putting them in a shallow dish and allowing water to flow over it. In this way by noting the more or less intense blue color of the solution (sulphate of copper) in may be judged how much longer the roasting must be continued. When at last a sample gives a solution with merely a bluish tinge, and which when treated with salt yields a precipitate of chloride of silver proportionate to the amount of silver in the matte, the roasting may be considered complete, provided the whole mass from which tne sample was taken is homogeneous.

If the roasting were continued at a temperature sufficient to decompose sulphate of copper, the sulphate of s lver would likewise be partially decomposed, for it only remains unchanged at this temperature while in direct contact with vaporous sulphuric acid, and for this reason the following conditions must be fulfilled.

f. That during the roasting the charge must be slowly stirred, and the lumps, broken, and the charge must be continually changed from one side to the other, and also that during the reduction of the sulphate of copper and the formation of sulphate of silver—the so-called "dead roasting"—the charge must be thoroughly mixed, slowly raked, and changed once or twice from one side to the other.

If all these conditions have been fulfilled the roasted matte is in such a condition that after being sifted, when leached with water, the silver will be as completely dissolved as can be desired by such a simple process. In regard to the yield of silver, it must be remarked that the roasting cannot be effected without some loss, because aside from the formation of dust which causes a mechanical loss, the reduction of particles of sulphate of silver at the surface cannot be avoided in dead roasting, and in consequence thereof, silver is volatilized, the furnace must therefore be connected with condensing chambers, in order to recover not only the ore dust, but also the volatilized silver.

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Useful Recipes.

PROCESS OF OATAINING NITROUS ACID GAS FOR MAKING SULPHURIC ACID.—To produce nitrous acid, Messrs. R. Laing and Cousins use arsenious acid to decompose the nitrate of potash or soda. With nitrate of soda they use seven parts of nitrate to five of arsenious acid, or six parts of arsenic acid. The decomposition takes place in retorts heated by the furnaces in which pyrites are burnt; the gas is conducted by a pipe in the direction of the draught. They use also chromic iron ore to decompose the nitrate of potash or soda. By the last process, bi chromic of potash and sulphuric acid are manufactured at the same time.

NEW METHOD OF PREPARING MODELLING CLAY.—The clay at present employed dries very quickly, and is on that account objectionable. It is suggested to employ glycerine in moistoning it. The product thus obtained will possess all the good qualities of wax, but will be considerably less expensive, and will be superior to it in retaining the same consistency whatever the temperature to which it is exposed. Before the glycerine is added to the clay, the latter must be well dried and pulverized. Any water left in it would subsequently destroy the plasticity, as it would pass off by evaporation, and thus leave the clay without the necessary amount of liquid for the preservation of its plasticity.

WHITE PASTE WHICH WILL ADHERE TO ANY SUBSTANCE.—Make the following mixture: Sugar of lead 720 grains and alum 720 grains; both are dissolved in water. Take 2½ ounces of gum arabic and dissolve in 2 quarts of warm water. Mix in a dish 1 pound of wheat flour with the gum water cold, till in pasty consistence. Put the dish on the fire, and pour into it the mixture of alum and sugar of lead. Shake well, and take it off the fire when it shows signs of ebullition. Let the whole cool, and the paste is made. If the paste is too thick, add to it some gum water, till in proper consistence.

SURE REMEDY FOR A FELON.—This very painful eruption, with all the "remedies" recommended, is seldom arrested until it has run a certain course, after causing great suffering for two or three days and nights. The following remedy is vouched for by the Buffalo *Advocate* as a certain thing from its own knowledge:

"Take a pint of common soft soap and stir in air slacked lime till it is of the consistency of glaziers putty. Make a leather thimble, fill it with this composition and insert the finger therein, and a cure is certain."

This is a domestic application that every housekeeper can apply promptly.

FLEXIBLE VARNISH.—I. Take India rubber in shavings one ounce, naphtha two lbs; digest at a gentle heat till dissolved, and strain.

II. Take India rubber one ounce, drying oil one quart; dissolve by as little heat as possible, employing constant stirring, then strain.

III. Take linseed oil one gallon, dried white copperas and sugar of lead, of each three ounces, litharge 8 ounces; boil with constant agitation till it strings well, then cool slowly and decant the clear. If too thick, thin it with drying oil.

On the Pollution of Rivers.

In the British Scientific Association, in session at Nottingham, on the 27th of August, Colonel Sir J. E. Alexander read a paper "On the Effects of the Pollution of Rivers," with especial reference to rivers in Scotland. The case of the English rivers seemed now almost hopeless, for the pollution was so general that few salmon were caught. In Scotland, also, they had been rapidly degenerating of late, but there was still some hope of saving them. Since his return from New Zealand he had paid great attention, as a magistrate to the state of the rivers in his immediate neighborhood, and was astonished to find how the gift of Providence has been abused.

A favorite accusation against those who sought to preserve the purity of rivers was that they sought to affect injuriously the trade and manufactures of the country, on which its prosperity mainly depended; but his reply invariably was that the rivers ought not to be polluted and poisoned for the aggrandizement of mill owners and manufacturers. Colonel Alexander instanced several rivers which had been destroyed in this manner. The Kelvin, near Glasgow, to which the lover in his song invited his mistress, was now a common sewer, contributing to swell the pollution of the Clyde. It was astonishing, in the midst of so much wealth, health was not made the first consideration, and that means were not adopted to cut off sewage from the rivers and to utilize it on the Chinese plan.

The Earl of Selkirk, a man of science, told him a short time ago that the Avon at Linlithgow was scoured of its fish entirely for the sake of one paraffin work. Paper mills likewise were fertile sources of destruction. The North Esk, near Edinburgh, which was covered every day in the week with a soapy foam, had become unfitted for its primary purposes, and no consideration on earth would induce him to accept a residence on its banks. Referring to what had been salmon rivers, Colonel Alexander mentioned a statement made by the Mayor of Bristol to the effect that in the Severn the taint of creosote was so strong that salmon caught in these waters were unsaleable in London. At Sterling, in like manner, the newly arrived officers of the garrison were surprised with the taste of tar in the fish caught in the Forth, which was found to result from the waste materials emptied from petroleum works. In conclusion Colonel Alexander expressed a hope that the process of utilizing sewage which had been commenced at Dartmoor would be extensively practiced, and that Scotland as a country would be saved from the loss of beauty and ruin of its palatial residences, that must infallibly result from the progress of river pollution.

Professor Humphrey held it to be essential to the health of the people that our river waters should be as pure as that the blood flowing in our veins should be healthy. The pollution of river water was peculiarly a theme suitable for treatment by scientific men, and, accordingly, for members of the British Association.

Mr. Wyatt said that many rivers in the midland counties were as much polluted by sewage as by manufactures. Night soil and every kind of refuse that could not conveniently be got rid of was thrown into the water. In one of the neighboring rivers he had actually found a cod's head and shoulders, a decomposed ham, and a leg of veal.

Dr. McAdam believed that the sewage of towns did as much injury as the refuse of mills, and suggested a scheme by which the cost of the interception of sewage should be defrayed by a rate levied partly on the mill owners and partly on the inhabitants of the places benefitted.

Professor Bennett, of Edinburgh, believed that several subjects had been mixed up in the discussion—*First*, there was the matter of human health; *second*, health of fish; *third*, the question of nuisance; *fourth*, of agriculture. The first of these subjects had been greatly exaggerated, the pollution of rivers doing little harm beyond the destruction of fish. The nuisance of smell in the case of running streams did not affect the public health. The most important aspect of the question, however, was that concerning agriculture. There could be no greater mistake than that of carrying manure toward the sea instead of toward the land. In Edinburgh a man who succeeded in utilizing sewage, and from one barrow of manure made and disposed of 600 tons annually, had, under the fear of the cholera, been fined for committing a nuisance, and would be obliged to abandon his works.

Mr. Haughton was of opinion that sewage ought to be carried away by some new system of transport from all great towns once in twelve or twenty-four hours, and that all sewers should be stopped up.

Professor Beardmore had found in his experience that fish were among the greatest purifiers of a river, from the fact that they eat the dirt which was carried down along with the water. As soon as the fish were killed the pollution of the river increased with tenfold rapidity.—*U. S. Railroad and Mining Register.*

Recent Inventions.

Purifying Water.—Mr. Bird of Birmingham, England, has patented the use of the neutral sulphate of alumina for purifying water. Its action depends upon the presence of carbonate of lime in the water to set free hydrated alumina, and as carbonate of lime is almost universally present, the process is as universally applicable. The advantage of the use of this compound is that beyond converting carbonate into sulphate of lime it introdnces no new salt, while the organic matter is carried down with the hydrated alumina.

A Novel Power.—A novel kind of power is employed for unloading ships at the Newport docks in Monmouthshire, England, and at some other places for other hoisting purposes. A water engine is used, and in the absence of the requisite "fall," the pressure otherwise obtained from natural sources is got at by a pressure of from 70 to 100 tons of gravel, as a weight upon a short column of water, thereby giving a pressure equivalent to some 1,500 feet head. The power is kept up by using a small steam engine to pump the water into the reservoir, and the weight of sand, after being depressed by use, is again developed by hydraulic power at a very small cost. The power may be distributed much more readily than steam power, to different localities in the vicinity of the main reservoir. By the use of this machinery, the *Railway News* says coal which formerly cost 5d. to 7d. per ton for delivery, can now be delivered for ½d.

Local Fire Alarm.—It is the invention of O. M. Rathbone of San Francisco, Cal. A tolerably correct idea of the contrivance may be had by supposing the body of the picture tassels in a room to be composed of a large fire cracker, having a fuse reaching to the floor, or ending in a small loose bunch back of the picture. At the first touch of fire this ignites and explodes the cracker with a noise like a pistol. The fire-cracker being connected with an alarm gong in any part of the house, its recoil jerks the wire, thereby giving the second alarm. In addition to this are alarms secured by tin between the laths and flooring around all chimneys, the place where fires usually originate. He has also single alarms for travellers, which have only to be laid down or hung up, and the fuse unwound and run around the room. They may also be attached to the bottom of furniture, and with safety, and a surety of alarm. These alarms are designated to nip the fire in the bud, when a few pails of water will be sufficient to stop its progress.—*San Francisco Call.*

Improved Cement.—A patent has been taken out by C. W. Westmacott, of London, for a new cement to be used as mortar for building and plastering, and also casting in moulds. The nature of the improvement consists of a mixture of carbonate of lime with common burned lime. The cement is composed of one bushel of burned lime to two bushels of dry ground chalk or ground limestone or marble. The lime as it comes from the kiln is first slacked with water, then mixed with the ground chalk or limestone in water; sand is then added in the same way that common mortar is made, and the mass allowed to stand for two or three days before the cement is used. This cement may also be made by mixing the burned lime, dry, with the chalk (which is dried in an oven) in powder. and kept for use, to be mixed with water. It may also be worked into a paste and modelled like clay. It soon becomes quite hard and fixed.

Correspondence.

As an example of the progress which gas manufacturing and illumination has made in the last half century, we introduce the following correspondence and copy of an old advertisement, kindly furnished by the writer. The letter is also significant in another sense, showing, as it does, that our efforts to satisfy our patrons are properly appreciated, the knowledge of which is most gratifying to us.

Trenton, N. J., May 7th, 1867.

Messrs. Bryant, Callender & Co.:

Dear Sirs: Noticing in the last number of the Gas Light Journal, the report of the Philadelphia Gas Works, it brought to my mind to send you a copy *verbatim et literatim*, of an advertisement in a Philadelphia paper, dated March 10, 1816, which I discovered one day pasted in as a lining of an old trunk. It is amusing in contrast to the present statement of a 24 hours' consumption, of 4.129,000 feet.

You may remember I last year took some exceptions to the Journal. I am pleased to say that it has entirely recovered its former good place in my esteem. You have, of late, given us a good share of valuable gas information.

Very truly yours,
J. S. Chambers,
Sec'y Trenton Gas Co.

GAS LIGHTS.

In announcing to the public the recommencement of the evening Illuminators of the Museum by means of *Carburetted Hydrogen Gas*, it is proper to draw their attention to the fact that all the rooms are now entirely illuminated with Gas, without the assistance of any oil, exhibiting the extraordinary spectacle of what may emphatically be called a *Fountain of Light*.

For the successful termination of this great and interesting experiment the Subscriber with pleasure acknowledges his obligations to the extraordinary zeal and perseverance of Dr. Kugler, who has thus demonstrated the superiority of his method of obtaining light from Gas, without stench, and brighter and cheaper than by any other means.

The Museum will be thus illuminated every evening until the public curiosity shall be gratified. The Chemical Experiments will be exhibited every Tuesday and Thursday evenings.

dtf) March 10, (1816). RUBENS PEALE.

Brevities.

—Tannin is present in 140 plants, caoutchouc in 96, and gutta percha in 7.

—Saluces estimated the temperature of fired gunpowder at about 5,300° Fahr.

—Aluminum bronze is made from copper 90 parts, and aluminum 10 parts. It works remarkably well.

—Most of the oil wells in Southern Kentucky have been abandoned as failures.

—The greatest height at which visible clouds ever exist does not exceed ten miles.

—Refined coal oil is a solvent of India rubber and gutta percha.

—During the year 1866 there were 9,450 patents issued at Washington, of which 58 were extensions.

—Mercury freezes at 38° Fah., and becomes a solid mass, maleable under the hammer,

—The projectile force of gun-cotton, when used in moderate charges in musket or cannon, is equal to that of about twice its weight of the best gunpowder.

—Some bold character has predicted that some of the men who assisted in laying the Atlantic Cable, will live to see a tubular sub-marine railway alongside of it.

—Gas!—An abandoned oil hole in Erie, Pa., furnishes an abundant supply of gas for lighting and heating a manufacturing establishment in that neighborhood.

—Gun-cotton, when properly prepared, explodes at a temperature of about 380 deg. Fah. It will not, therefore, ignite gunpowder when loosely poured over it.

—A report of a French commission, published in 1852, showed that the greatest amount of light is obtained from a gas flame at the expense of twenty-seven per cent. of carbon.

—Aluminum and tin are now gilded and silvered so neatly that the layer cannot be disturbed by the hardest burnisher.

—A sudden heat of 572° Fahr. will ignite gunpowder; flame will not ignite it unless it remains long enough in contact with the grains to heat them to redness.

—A roll of papyrus, exhumed from the ruins of Luxor, has been found to contain pleading at the Greek bar three centuries anterior to the birth of Christ.

—A London surgeon has invented an article called "rhigoline," from petroleum, which will have all the beneficial results of chloroform, without its attendant dangers.

PATENT CLAIMS.

Pertaining to Gas, Mining Petroleum, Water etc.

FOR THE TWO WEEKS ENDING MAY 16, 1867.

64,187.—MACHINE FOR MAKING WATER GAS AND OTHER PIPES.—Geo. H. Bailey, Jersey City, N. J.

First. I claim the employment, in the manufacture of pipes composed in whole or in part of cement or plastic material, of a plunger either movable or stationary, which is shaped substantially as set forth, either with or without spiral cutters, and which, by the application of power or by its own weight or momentum, displaces the cement in front of it, causing the latter to adhere to the pipe, and rendering it solid and compact, substantially as described.

Second. The combination with the plunger, D, of the top and bottom collars C C', with vent holes for the admission and escape of air, substantially as described.

Third. The application of lifting rods g g, to the collar C, for lifting this collar when the plunger is raised, substantially as described.

Fourth. I claim a plunger working within a metallic pipe or mold having one or bath ends closed, so as to more perfectly and forcibly compact the cement or plastic material within it, substantially as described.

64,188.—MODE OF LIGHTING GAS.—Arthur Barbarin, New Orleans, La.

First. I claim the direct use and application of spongy or finely divided platinum (without extra pipe for conveying the hydrogen gas upon the same) to an ordinary gas burner in any manner that shall cause the platinum to be directly in the path of hydrogen or hydro-carbon gas, when issuing through such ordinary burner, whether these gases be separate from each other or mixed together, whether the burners have additional jets or not, and whether the platinum be used and applied permanently or temporarily to said burners, for the purpose set forth.

Second. The lighting of hydrogen or hydro-carbon gas, whether separate or mixed, by means of spongy or finely divided platinum placed on a gas burner as herein specified, whether the said platinum be temporarily or permanently attached to the burner, or whether it be temporarily applied in any other way to hydrogen or hydro-carbon gases, either separate or in a mixed state, when issuing from a burner.

Third. The use of the same pipes and branches, as herein described for the purpose of conveying the gases, whether they are mixed or separate to the burners, for the purpose set forth.

Fourth. Conveying the gases, in a separate or mixed state, or one before the other, through the same pipe and branches as described, for the purpose set forth.

64,194.—GAS CONDENSER, SCRUBBER, AND WASHER.—Thos. B. Burtis, Chicago, Ill.

First. I claim the lengthy and narrow boxes D, the water vessels D2, above the same, and the water spaces E, between the same, substantially as and for the purpose set forth.

Second. The method of applying the water to condense, scrub, and wash the gas, substantially as set forth.

Third. The combination of the vessels D2, the overflow pipes k, water pipe k, service pipes 1, and water chambers M, as and for the purpose set forth.

Fourth. The application of the jet chamber M, as and for the purpose set forth.

Fifth. The application of obstruction pieces extending from top to bottom of the boxes D, substantially as and for the purpose set forth.

Sixth. The arrangement and combination of the pipes F and G, f and g, with their stop-cocks, valves and the boxes d d1 d3 and 37, as and for the purposes set forth.

64,232.—BURNING FLUID.—James T. Leete, New York City.

I claim a new compound for a burning fluid, having as its base benzine or naphtha, fully charged with carbonic acid, so as to neutralize and partially destroy its inflammability and the admixture thereafter of the several ingredients in the proportion named, as substantially set forth.

THE UNDERGROUND RAILROAD IN LONDON, ENGLAND.—In London, England, there is an extensive system of underground railway, that carries people about at the rate of fifteen miles an hour. They go across and around as well as from one end of the town to the other, stopping about once every half mile at some prominent corner, from which the passenger emerges into upper air, and finds himself miles away from the starting point. These trains run each way on double tracks about every ten minutes, and in the morning and evening often consist of seven or eight cars that hold thirty or forty people each. The cars are lighted with gas, but the tunnels are not, except at stations, so that one can read the paper and see his fellow-travellers. Nor is there any smell of smoke or cause of suffocation. The climate and soil of America may act differently on underground railways here. As the English gave Train's tramways a trial, we must put their system of underground railways on probation and then wait and see.

—An ingenious, but certainly not very inviting mode of procuring gas for illuminating purposes has been proposed in France. A French chemist estimates that a human corpse of ordinary dimensions, by a process of combustion in retorts may be made to yield 7,500 cubic feet of illuminating gas, at a cost of about $1.60.

A COMPLETE SUCCESS.—On the 16th of February we laid before our readers a descriptive account of a Track Laying Machine, invented by Mr. W. D. Robertson of San Francisco, and we have now to record its successful working, as will be seen by the following from the San Francisco *Morning Call* of May 31st:

"We have frequently alluded to Robertson's model of a machine for laying railroad ties and rails. Yesterday a number of gentlemen—practical railroad engineers and builders—assembled to witness a trial of a machine, just completed, after Robertson's model. The success of the trial exceeded the most sanguine expectations of the inventor and those who have aided in building it. It will lay track—including ties and rails—at the rate of six miles a day. In fact, it is believed that with sixteen men it can lay as much track in a day as can be laid in a week by the ordinary method with one hundred men. The established success of this invention is destined to open a new era in railroad building in this State, and to greatly lessen the cost and advance the speed of railroad construction everywhere. We congratulate Mr. Robertson, the inventor, and Mr. Henning, who aided in drawing the plans and making the models, on the triumphant success of the work upon which they have been so long engaged. With this invention, the time for the completion of the Pacific Rail road will be shortened at least two years."

—A productive mine can be worked to a great depth. In Europe some of the workmen have gone down as low as three thousand feet.

J. S. PHILLIPS, C. E. M.,

MINING ENGINEER, Etc,

from Cornwall, who came to work Ledges for a New York Company at Humboldt, Nevada, is free for Examination or Superintendence of Mines, in consequence of his immediate condemnation and abandonment of those operations.

REFERENCES:—Messrs. Daniels, Crozier, Coe, & Co., Bankers, e c., 22 Nassau street, New York. Orders by Telegram, Humboldt City, Nevada. n74-3t

Gas Engineer's Book of Reference,

Illustrated with numerous engravings, and containing description and prices of all articles required in connection with the system of Gas Illumination, as manufactured and supplied. By GEO. BOWER, 4to. paper, $1.00.

GAS FITTER'S GUIDE,

showing the Principles and Practice of Lighting with Coal Gas, with details of Fittings. Paper, 40 cents.

GAS CONSUMER'S GUIDE.

By WILLIAM RICHARDS. 1 Vol., 50 cents.

For sale by

D. VAN NOSTRAND,
76 Publisher and Importer, 192 Broadway.

BAY STATE FIRE BRICK

—AND—

CLAY RETORT WORKS.

CHELSEA, MASS.

DAVIS & CHADDOCK,

MANUFACTURERS.

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Also agents for the sale of J.K. BRICK & Co's, Clay Retorts, Fire-Brick, Gas-House tile, etc. 66tf

FOR SALE.

A COMPLETE SET OF APPARATUS FOR MANUFACTURING fifty thousand feet of Gas per day, consisting of Hydraulic Main, Bridge and Stand Pipes, Mouth Pieces, Condenser, Washer, Four Purifying Boxes and Station Meter.

For particulars apply to C. J. WESTERVELT, President, or to JOHN D. KEW, Superintendent, Paterson, New Jersey. 76-78

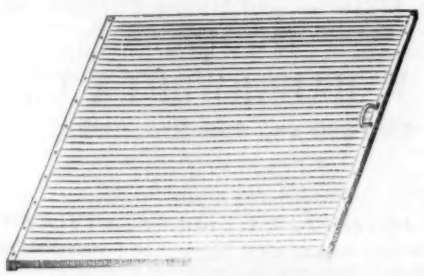
Notice to Companies Operating in Lands, Mines, Railroads, etc.

AN ENGINEER AND GEOLOGIST WHO HAS had long experience in the Coal fields, Collieries, Furnaces, and various descriptions of Mines, and in building Inclined Planes on prominent Railroads of the country, etc., is prepared for an immediate engagement. Can give suitable references. Address

ENGINEER AND SUPERINTENDENT,
Lock Box 40, Richmond, Va.

WANTED—A SITUATION BY A PRACTICAL GAS ENGINEER of experience. Can lay Mains and Service Pipes, and do all fittings required for Gas. Has been in his present situation eight years, and can give testimonials as to character and ability. Would not object to go abroad.

WILLIAM HUMPHREYS,
*tf Supd't Gas Works, Waterford, N. Y.



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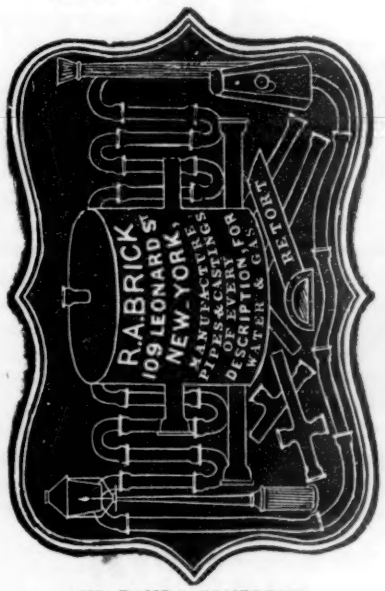

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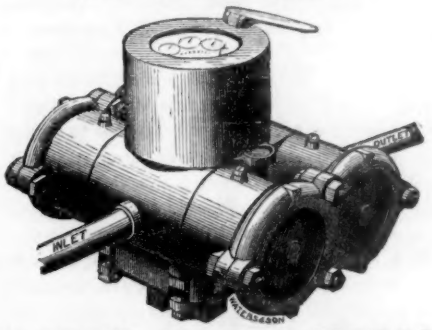

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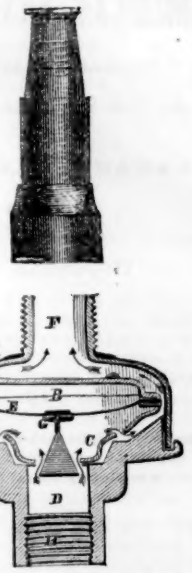

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EDITORS AND PROPRIETORS.

THURSDAY, MAY 16, 1867.

WISHING TO MAKE this Journal an organ of intelligent discussion to those of our readers who may wish to gain or give information on the subjects to which its columns are devoted, the publishers solicit letters from all among them who make the study of those subjects a pleasure, or a profession.

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☞ NEWS AGENCY.—The American News Company, 119 and 121 Nassau street, New York, are agents for this Journal. Newsdealers will please send orders to them.

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Answers to Correspondents.

"S. L." of N. Y.—To bronze cast-iron, clean it thoroughly and dip it in a solution of sulphate of copper. The sulphate of copper should be dissolved in water. Cast-iron heated to about 300 degrees and dipped in linseed oil will have much the appearance of bronze, and will not corrode by exposure to air and the elements.

"D. S. T." of Ohio.—To remove the lustre of shellac varnish, rub it with sand paper. The furniture may then be oiled as usual, only it will not require nearly so much.

"P. T." of Mass.—D. Van Nostrand, Publisher, at 192 Broadway, can furnish you with a work on gas-fitting.

"A. N. S." of Ill.—There is no doubt coal in a large body is liable to spontaneous combustion, especially when exposed to the weather. Carbonic acid gas would have a tendency to extinguish coals when burning, and if sufficient volume of the gas was made to envelope the burning mass, it must inevitably be extinguished.

"L. P." of Ohio.—Stevenson's turbine water wheel yields a larger proportion of the total power of the water than any other wheel we know of. His office is at 40 Dey street. Please see advertisement in this Journal.

NATURAL GAS.—The inhabitants of Baku, on the Caspian Sea, have recently made use of the emanations of carburetted hydrogen gas from the waters for lighting purposes. The gas is collected by means of large funnel mouthed tubes, which are attached to floating rafts and dip some feet into the water. Baku was the sacred city of the Guebres, or Fire-worshippers, and the neighborhood abounds with naphtha springs and "blowers," which consist of streams of inflammable gas issuing from the ground. The most extensive of these "blowers" is known by the name of the "perpetual fire," and is situated some miles to the northeast of Baku. It is an object of great veneration, and is said never to have been extinguished.

—Dr. De Brivu, of Paris, has produced an enamel paint made from India-rubber, which renders iron absolutely proof against the action of the atmosphere.

—An English patent has been taken out for a process of manufacturing picture-frames, moldings, furniture decorations, store fronts, etc., from compressed peat.

How to Extinguish Fires in Mines and Coal Yards, etc.

It is remarkable that science has done so little to provide some substitute for water for the purpose of extinguishing that great element of destruction—fire, when it has once passed beyond control. It is a settled axiom, which has passed into a proverb, that water and fire are natural antagonists, and no other element has been employed with any degree of success to extinguish conflagrations the world over. Recently, however, some effort has been made to bring chemistry into the field as an assistant if nothing more, whereby gases are to be evolved which are non-supporters of combustion, and by their presence cut off the supply of oxygen or air, the great supporter of combustion, and in that way extinguish combustion of any nature.

One of the earliest of these novel fire extinguishers was exhibited in various parts of the country in 1851, by the inventor, a Mr. Phillips, and we believe P. T. Barnum, Esq., became interested in the invention, and had his museum supplied with them. It seems, however, they were not used, or if so, were not effective to save the building when its hour of trial came. The Phillips Fire Annihilator, as it was called, consisted of two outer cases of metal with a chamber containing water. A chemical compound of wood, charcoal, coke, nitrate of soda, plaster of Paris and size finely ground mixed and moulded in blocks was placed in a central chamber. A glass rod containing sulphuric acid was inserted into this mass, which was to be shivered by a blow by a mechanical apparatus. This brought the acid and compound in contact and gas was instantly evolved and projected by a pipe and nozzle with considerable force upon the flames.

More lately the Levy Brothers, licencees of Baraguanath & Van Wiser, patentees, exhibited in this city an apparatus of simple construction, but operating somewhat on the same principle. February, 14th ultimo, they gave a test exhibition before a Committee of the Metropolitan Fire Department at Jones' Woods. The experiments were remarkably satisfactory, and seemed to demonstrate the value of this apparatus as a portable extinguisher to subdue a fire in its first stages, and even after it had obtained considerable headway.

The water in this apparatus becomes charged with carbonic acid gas, and in this condition it may be kept at a high pressure ready for use at a moments warning. By simply turning a stop-cock connecting with a pipe or hose and nozzle the surcharged fluid is projected with great force upon the flames which are instantly suffocated by the gas, and prevented from igniting again by the saturating of the combustible materials with the fluid. This principle of extinguishing fires in mines has been employed in England by passing a large volume of air through a furnace, so arranged as to convert it into carbonic oxide and carbonic acid gas. This, mixed with steam, is forced into the mine until the fire is extinguished.

A case of this kind has been noticed where an immense amount of coal had been burning for many months, and all other means to extinguish it had failed; but this process completely quenched the combustion after a short time.

The frequent cases of spontaneous cambustion of gas coals when in bulk has been a serious and costly evil, as many of our gas companies have cause to know.

In this connexion it would seem that gas companies and others who store large quantities of coal can consult their own interests by devising some method to rapidly make carbonic acid gas or carbonic oxide, or both, to be used in connexion with a fire engine or a steam jet, in order to fill the interstices of the whole mass of coals with the gases, to prevent the air gaining access to the fire. The gases having a greater specific gravity than air would naturally displace it, and would reach the fire where water could not, owing to its tendency to constantly seek a lower level.

Prof. Vander Weyde, M. D., as a Chemist and Inventor.

Professor P. H. Vander Weyde, M. D. of Girard College, Philadelphia, Pa., has lately favored us with two small pamphlets, both devoted to practicalizing science, or rather making science intelligently and practically useful and beneficial to the wants of man. It is really refreshing to have a man who is thoroughly master of the subjects upon which he treats abstractly, step out into the arena of invention, and put into tangible, valuable shape ideas which are founded upon correct principle as sustained by the true and immutable laws of science.

LUBRICATORS.

The first pamphlet entitled "Remarks on Lubricating Oils," refers to the great loss of power the world over, owing to the use of inferior lubricators for machinery, and its injurious effects upon the same. It causes them to wear out in, he estimates, one half the time it would do with a perfect lubricator. These facts caused the Professor to analyze and study the nature of different lubricators, and compare them practically by apparatus especially constructed for the purpose, whereby he finally succeeded in producing a lubricator which, he deems, answers all the requirements, and he has organized a company to manufacture it largely for the mechanical profession.

This lubricator is, in part, the Synovial fluid which nature secretes to lubricate the joints of animals, combined with the best lubricating ingredients of the heavy petroleums, and has the qualities most essential, namely, non-liability to freeze in the coldest weather, low point of inflammability, medium consistency or fluidity, non-corrosiveness, is not liable to absorb oxygen, or to spontaneous combustion, or to gum up or dry away, etc. All of which qualities the mechanical world will not fail to appreciate, we have no doubt, when fully convinced by actual trial, which is easily to be had as the material is said to be very cheap.

SCALE IN STEAM BOILERS—ELECTRICITY.

The next work is a desertation upon the use of electricity, for removing scale from steam boilers, and preventing its formation, on true scientific and practical principles.

After showing the fallacies that have obtained in the public mind as to the mysterious influence and powerful effects produced by electricity to cause explosion of steam boilers, also to cause the deposit of sediment or scale, Professor Vander Weyde then goes on to show up the patents which have been granted for absurd and whimsical devices to prevent the action of these mysterious electrical influences in causing these deposits, etc., and finally closes by giving the results of a series of experiments, whereby he discovers a simple and efficient remedy for the evil founded upon true scientific principle. It consists in collecting the positive electricity formed in the steam space of a boiler, by means of metallic points, and discharging the same through the conducting power of the boiler itself, into the water at any place where the boiler is in contact with the water, thereby repelling the electro-positive deposits according to the well known law of electricity, whereby they are continually prevented from settling, and are kept in suspension till blown off in the usual way.

This invention is the subject of a patent, and it is

said to be in practical operation in several boilers in New York and Philadelphia, where it gives perfect satisfaction. Such is a short sketch of a couple of valuable ideas put in practical shape by a scientific man.

New Books.

"FACTS ABOUT PEAT" is the title of a work of over 300 pages, 8mo., by T. H. Leavitt, Esq., published by Lee & Shepard of Boston.

The author is also editor of the newspaper entitled *Leavitt's Peat Journal*, which we referred to in our last issue.

The book first referred to is the third edition, and is evidently written and compiled with care, and affords a large amount of valuable information on peat as an article of fuel, with remarks upon its origin and composition, the localities in which it is found, the methods of preparation and manufacture, and the various uses to which it is applicable, etc., to which is added an interesting chapter on the utilization of coal dust with peat to produce a cheap fuel, adapted for steam service. The work will be a valuable acquisition to all who are interested in this really new and important branch of industry

"LESSONS ON OBJECTS."—A work designed for children between the ages of six and fourteen years, arranged by Mr. E. A. Sheldon, Superintendent of Public Schools, Oswego, N. Y., author of Elementary Instruction, Reading Books, Charts, etc. Published by Chas Scribner & Co., New York.

This is the fourteenth edition of a class of books designed to cultivate the senses, to awaken and quicken observation, and lead children to observe carefully everything in nature about them that comes within the range of the senses. It uses the material world as one of the means of educating the minds of children by the exercise and harmonious cultivation of their faculties.

Object teaching is certainly one of the greatest improvements of the present century in the art of teaching, and as an aid to elementary instruction.

Oil versus Coal for Steam Boilers.

Some recent experiments in England in the use of oil instead of coal, for steamers, are summed up as follows:

This invention in its present form is not likely to supersede the use of coal for land engines, but appears to be one of great value for sea-going steamers. Thus, in the case of the Persia, one of the Cunard line of steamers, the following calculations will show what the successful use of oils would be to its owners. It is calculated, from what is now being done, that eight gallons of oil per hour would be sufficient for each furnace, and that the steamer's fourteen furnaces, in a voyage of twelve days, would consume, therefore, 32,256 gallons, weighing 169 tons, and costing £1,690. The Persia takes for her voyage out, 1,500 tons of coal, costing on board about £1,500; thus showing that the cost of oil is £190 greater than the cost of coal. But against that there is a saving of 1,331 tons, which at £3 per ton for freight is a gain of £3,993; deducting from which the £190, the actual gain from one voyage is shown to be £3,893, to which sum must be added a saving of a stoker's wages as the apparatus is self-acting when once fairly in operation. The principle of the invention seems to be also applicable to smelting, glass making, and other similar purposes, where intense heat is required and must be under perfect control.

The invention by which this oil is utilized is as follows:

It consists in placing within the fire-box of an ordinary marine boiler a generator, in which crude coal oil, costing about sixpence per gallon is admitted, in combination with a quantity of steam, the two producing hydro-carbon gas, which, acting on the heating surface of the boiler, produces steam rapidly, with scarcely any smoke, and no smell. This method of using petroleum, shale and other earth oils, may be thus briefly described: Knowing that at a certain heat, viz., that of iron at a dull red, petroleum, shale oil &c., will be converted into gas, there is introduced into the ordinary furnace space of the steam boiler, an apparatus consisting of a gas receiver or distributor, below which are placed two pipes, connected with the receiver at both ends. Into these retorts, or generators, the oil is introduced through a feed pipe, the generators, in the first instance, being brought to the required heat by means of a small coal fire. The oil is then turned on, and immediately on coming in contact with the heated iron generators is converted into gas, and rushes up into the receiver, whence it issues through small holes, and is burned as ordinary gas. All being in working order, the coal fire is raked out, and another receiver provided with burners is placed on the empty grate, and being connected by a pipe with the upper receiver, a portion of the gas is thus conducted below the generators, and burned under them to keep them up to the requisite heat. This is the method of burning oil alone; but it is found that by introducing a small jet of steam or stream of water along with the oil, the heat of the gas is very much intensified, and the oil required is very much less; also that nearly all smoke and waste of carbon are prevented. The action of the water or jet of steam is as follows: The oil by its peculiar nature being first decomposed, a quantity of carbon previously held in chemical union becomes separated and free as soon as the conversion into gas takes place. The water also being decomposed into its elements, the oxygen unites with the free carbon, forming carbonic oxide, and the hydrogen mixes with the remaining portion of the free carbon, in which state the whole of the products are consumed, the mixture of carbon and hydrogen producing heat of great intensity.—*Exchange.*

WORKS ON GAS.

Bowditch—ANALYSIS, PURIFICATION AND USE OF COAL-GAS. 8vo cloth, $6.25.

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Burners 2 feet per hour.
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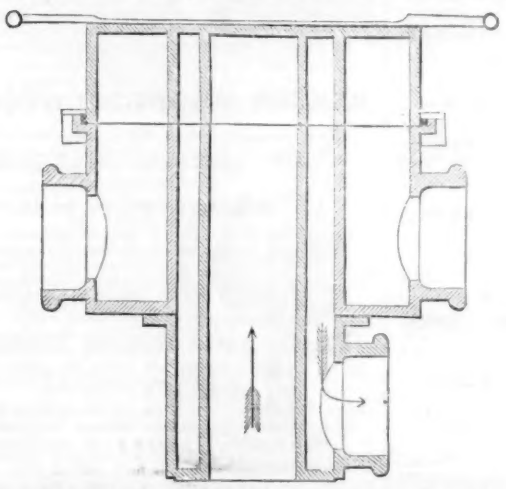

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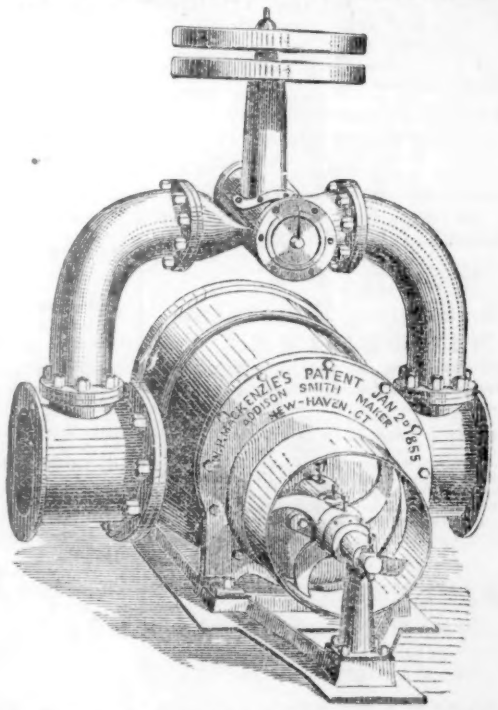

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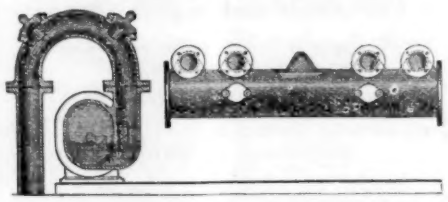

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☞ N. B.—The highest cash price paid for the above named articles.

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SUITABLE FOR GAS MACHINES, ALSO FOR CARBURETTING OF GAS, &c.

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THE VALUABLE IMPROVEMENT FOR SAVING and otherwise improving the gas, invented by Dr. J. S. Wood, described in the "Gas-light Journal" October 2d, 1866, is now for sale by State or County rights.

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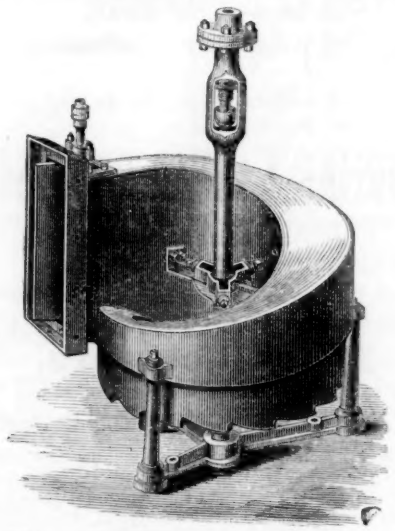
STEVENSON'S

Helical Jonval Turbine Water Wheel,



For first-class mills and factories where great economy of wate and simplicity and durability are required.

Manufactured by the Patentee,

J. E. STEVENSON, Hydraulic Engineer,

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☞ Stevenson's Jonval Turbine Water Wheel gave the highest per centage of power over all others at the trial of Water Wheels at Fairmount Works, Philadelphia, March 9th, 1860. NINETEEN WHEELS WERE TESTED. The only practical test on record.

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With STEARN'S PATENT SETS, far superior to Rack and Pinion and Screw sets. Years of wear will not cause lost motion. All plank sawed with perfectly even thickness. No time lost in setting. Suitable for sawing any kind of Lumber and Timber.

SUPERIOR MULAY MILLS

With the latest improvements, at reasonable prices.

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Especially adapted to lumbering purposes.

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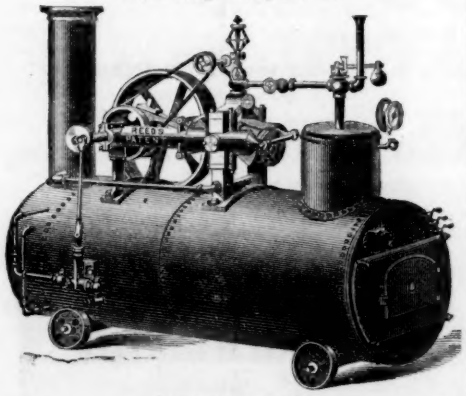

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Kerosene Cooking & Heating

STOVES AND RANGES.

THESE COOKING STOVES WILL

☞ *Bake, Boil, Stew, Fry and Roast,*

With the greatest economy and facility, and without heating the room in which they are used. They are perfectly simple, operating like an ordinary Kerosene Lamp with a chimney, and are the only Kerosene Stoves that burn without smoke or odor.

"We have been perfectly astonished to see what a labor-saving, dirt saving and heat-saving institution is EDDY'S PATENT KEROSENE STOVE. Taking the cost of running it, and the result attained, it is the best patent in the market."—*Worcester Daily Spy.*

Our Heating and Cooking Stoves are very convenient and economical, especially where a fire is required but a few hours at a time.

Orders for Stoves may be sent through American Advertising Agency, 389 Broadway, New York.

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Manufacturers, No. 605 Sixth Ave., New York.

Send for Illustrated Circular. (136

KNITTING MACHINES

FOR

Families and Manufacturer,

☞ *Something New and Invaluable for Family Use.*

We offer the public the simplest, strongest and best Knitting Machine in the world.

It occupies but little space—is portable and can be attached to a stand or table, weighs about 40 lbs.

It will knit a variety of Stitches—the breakage of needles is trifling—the cost of needles is insignificant and the most delicate material can be knit pure and spotless, as the needles are not oiled.

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HIGHEST PREMIUM

Shuttle Sewing Machine

Has only to be seen and operated to be Appreciated.

Call and see for yourself before purchasing. Please bring samples of various kinds of thread, (such as is usually found at stores,) and various kinds of fabric, which you know the former most popular Sewing Machines either cannot work at all, or, at best very imperfectly.

SUPERIORITY.

over any other Machine in the market will be seen at a glance.

1st It runs easily and rapidly, and is so constructed as to endure all kinds of hard usage.

2d. No breaking of threads in going over seams.

3d. No imperfect action of the feed at uneven places in the work.

4th. The Weed-stitch catches of itself, and will sew from the finest lace to the heaviest leather, and 200 cotton to coarse linen thread.

5th. The Weed Machine will do beautiful quilting on the bare wadding, without using inner lining; thus leaving it soft as if done by hand.

6th. The variety of fancy work that can be done on the

WEED MACHINE,

with so little trouble, makes it equal, if not superior, to six machines combined; for instance. it Binds, Hems, Tucks and Sews on the band at the same time, and in face, the

WEED NO. 2 MACHINE,

as before stated, is equivalent to a combination of any six ordinary machines.

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Below we give a few prices:

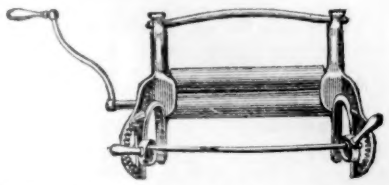
No. 2. Oil Black Walnut, Ornamented with Hemmer.	$60,00
No. 2. Oil Black Walnut, Hall Case, Ornamented, with Hemmer.	65,00
No. 3. Extra Oil Polished Black Walnut, Half Case, Large Table beautifully Ornamented.	75,00

WEED SEWING MACHINE Co.,
136. 506 Broadway, New York

PUTNAM'S CLOTHES WRINGER.

IT IS THE ONLY RELIABLE

Self-Adjusting Wringer.



No Wood-work to Swell or Split. No Thumbscrews to get out of order. Warranted with or without Cog wheels.

It took the First Premium at Fifty-seven State and County Fairs in 1863, and nearly double that number in 1864, and is, without an exception, the *best* Wringer ever made. Patented in the United States, England, Canada, and Australia. Agents wanted in every town, and in all parts of the world. Energetic agents can make from $3 to $10 per day

WHAT EVERYBODY KNOWS, VIZ.:

That Iron well galvanized *will not rust.*
That a *simple* machine is better than a complicated one.
That a Wringer should be *self-adjusting, durable, and efficient.*
That thumb-screws and fastenings cause *delay* and *trouble* to regulate and keep in order.
That wood soaked in water will *swell, shrink,* and *split.*
That wood-bearings for the shaft to run in *will wear out.*
That the Putnam Wringer, with or without cog wheels, will *no tear the clothes.*
That cog-wheel regulators are not essential.
That the Putnam Wringer has *all* the advantages, and *not one* of the disadvantages above named.
That all who have tried it pronounce it the *best* Wringer ever made.
That it will wring a thread or a bed-quilt *without alteration.*

We might fill the paper with testimonials, but insert only a few to convince the skeptical, if such there be; and we say to all, *test* Putnam's Wringer. Test it *thoroughly* with *any* and any others, and if not entirely satisfactory, return it;

PUTNAM MANUFACTURING CO.—*Gentlemen:* I know from practical experience that iron well galvanized with zinc will not oxydize or rust one particle. The Putnam Wringer is as near perfect as possible, and I can cheerfully recommend it to be the best in use. Respectfully yours,

JOHN W. WHEELER, Cleveland, O.

Many years' experience in the galvanizing business enables me to indorse the above statement in *all particulars.*

JOHN C. LEFFERTS, No. 100 Beekman St.

NEW YORK, *January,* 1864.—We have tested Putnam's Clothes Wringer by practical working, and know that it will do. It is cheap; it is simple; it requires no room, whether at work or at rest; a child can operate it; it does its duty thoroughly; it saves time, and it saves wear and tear. We earnestly advise all who have *much* washing to do, with all intelligent persons who have *any,* to buy this Wringer. It will pay for itself in a year at most. HORACE GREELEY.

PRICES—$8, $9, and $10.

Sample Wringers sent, express paid, on receipt of price.

Manufactured and sold, wholesale and retail, by

PUTNAM MANUF'G CO.,
13 PLATT STREET, New York,
BENNINGTON, Vt.,
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C. GEFRORER,

MANUFACTURER OF

Gas Heating Apparatus

OF EVERY DESCRIPTION,

Gas Burners, &c.

No. 529 COMMERCE STREET,

PHILADELPHIA, PA.

Burners for Wood, Coal Oil and Water Gas.

Gas and Lava Burner Tips

Constantly on Hand.

THE AMERICAN METER CO.

Organized under the General Manufacturing Laws of the State of New York

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THOMAS C. HOPPER, *Superintendent at Philadelphia.*

This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS AND REGISTERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

The combination of Mechanical and Scientific Skill, and the long experience of the several members of the Company, is a sure guarantee of durability, accuracy and excellence of workmanship. Orders addressed

AMERICAN METER COMPANY,

West Twenty Second Street, New York. Arch and Twenty Second Streets, Philadelphia. No. 23 West Street, Boston will meet with prompt attention.

Harris & Brother, Practical Gas Meter Manufacturers,

Continue, as heretofore at their old Establishment, No. 1117 CHERRY ST., PHILADELPHIA, to Manufacture

WET AND DRY GAS METERS, and all kinds of GAS APPARATUS, and furnish all articles appertaining to the use of Gas Works. ☞OUR WORK WARRANTED—Satisfaction Guaranteed. Orders respectfully solicted, and promptly attended to, by

HARRIS & BRO., No 1117 Cherry st., Philadelphia.

Messrs. Harris & Brother, Philadelphia Gas Works, February 14, 1857.

Dear Sirs;—I take great pleasure in stating that we have found your meters to register with entire correctness, and to be generally of very good quality—the number furnished by you to these works is over 5,000. John C. Cresson, Engineer;

Office of the Gas Light Company of Augusta, Ga., March 6th, 1858.

This is to certify that having used meters manufactured by Messrs. Harris & Bro., for the last nine years, we do not hesitate to state they have given entire satisfaction in point of wokmanship and accuracy of registration; they are surpassed by none, and equaled by few manufactories in the Union; we have used meters made by other establishments but our preference is in favor of those made by Harris & Bro., of Philadelphia, Pa.

G S. Hookey, Superintendent of the Gas Light Company of Augusta, Georgia.

Messrs. Harris & Brother, Philadelphia. Philadelphia, March 4, 1858.

Gentlemen—We take great pleasure in bearing our testimony to the very superior character of the meters we have received from your establishment. We have always found the workmanship all we could desire, while the accuracy and reliability of their measurement have always been satisfactory. We have used meters made by other parties, and none have given as entire satisfaction as those received from you. We are, gentlemen, very truly, yours, Birkinbine & Mears.

Messrs. Harris & Brother. March 14, 1857.

Gentlemen—For the last ten years we have used in the Philadelphia Gas Works, meters made in your factory, and take pleasure in expressing my opinion to their correctness. On several occasions I have taken your meters apart, and found the material used in the manufacture of the same, to be as fine quality as is used in those imported from Europe, or made by any of the manufactur in the United States. Respectfully Yours George Wiegand, Inspector of Gas Fittings, Philadelphia

C. GEFRORER,

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Burners for Wood, Coal Oil, and Water Gas. Brass and Lava Burner Tips Constantly on Hand.

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THE ATTENTION of the public and the trade is invited to our New Scale, Seven Octave, Rosewood Piano Fortes, which for volume and purity of tone are unrivalled by any that have hitherto offered in this market. They contain all the modern improvements, French Grand Action, Harp Pedal, Iron Frame, Over-strung Bass, etc., and each instrument, being made under the supervision of Mr. J. H. Grovesteen, who has had a practical experience of over thirty years in their manufacture, is fully warranted in every particular.

THE "GROVE-STEEN PIANO-FORTE"

RECEIVED THE HIGHEST PREMIUM AT THE

CELEBRATED WORLD'S FAIR.

Where were exhibited instruments from the best makers of London, Paris, Germany, Philadelphia, Baltimore, Boston, and New York; and also at the American Institute for five successive years, the gold and silver medals from both of which can be seen at our warerooms.

By the introduction of improvement we make a still more perfect Piano-Forte, and by manufacturing largely, with a strictly cash system, are enabled to offer these instruments at a price which will preclude all competition.

PRICES

No. 1,	Seven Octave, round corners,	Rosewood, Plain Case,	$275
No. 2,	" "	" Heavy Moulding	300
No. 3,	" "	" Louis XIV style	325

a fac-simile of the accompanying cut.

TERMS—Net Cash, in current funds Descriptive circular sent free on application.

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PASCAL IRON WORKS

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PHILADELPHIA,

Manufacture Wrought Iron Welded Tubes for Gas, Steam or Water; Lap-Welded Boiler Flues, GALVANIZED WROUGHT IRON TUBES,

ARTESIAN WELL PIPES,

of Wrought or Cast-Iron, screwed together, flush inside and out; Gas-works Castings, Retorts and Bench Castings for Coal Gas-works,; Cast-Iron Street Mains, Bends, Branches, Drips, &c.

Gas and Steam Fitters' Tools, &c.

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MERRICK & SONS, Engineers,

MANUFACTURERS OF EVERY DESCRIPTION OF GAS MACHINERY.

Retorts, Bench Castings, Condensers, Washers, Scrubbers, Wet or Dry Lime Purifiers, Coke Wagons, Fire Tools, Wrought Iron Grate Bars, Gasholders, either Telescopic or Single, with Suspension Frames complete; Wrought Iron Roof Frames, for Iron or Slate; Stop Cocks, Exhausters, Steam Pumps, Boilers and Tanks, Steam or Hand Air Pumps for proving Street Mains, Centre Seals, Governors, Wrought or Cast-Iron, Line Sieves for Purifiers, Hoisting Machines for Lifting Purifier Covers.

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(Successors to Colwell & Co.)

Manufacturers of

PIG IRON & CAST IRON GAS & WATER PIPES.

Also, Heavy & Light Castings of every description, No. 207 North Water street and 206 North Wharves, Philadelphia.

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TO GAS COMPANIES.

THE UNDERSIGNED DESIRES TO undertake the supervision of several small Gas-works, to visit and examine them as often as may be necessary; to obtain and inspect their coal, castings, fire-brick, and other materials; and to manage their general business in such a manner that they shall be under such supervision as is now attainable in large works, at much increased cost. Also, to advise as general Consulting Engineer and expert in practical chemistry.

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POOLE & HUNT,
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are prepared to execute orders for
GAS-HOLDERS,
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And other descriptions of
Iron Work for Gas-Works, Water-Pipes, and Heavy Castings, and Machinery generally.

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GAS APPARATUS

For Country Residences, Public Buildings, &c.,

FROM $300 UPWARDS.

EVERY DESCRIPTION OF GAS FIXTURES.

Gas Fitting in all its branches

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THE WOODWARD
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SAFETY STEAM PUMP,

—Adapted for Mining and Fire Purposes—and
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Also, Wholesale and Retail Dealers in WROUGHT IRON PIPE, BOILER TUBES, etc.,

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Formerly 77 Beekman Street, *New York.*
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Wet and Dry Gas Meters,

STATION, SHOW, & EXPERIMENTAL METERS,

Photometers, Pressure Registers, Indicators, and Gauges, Governors. Meter Provers, Centre Seals, Fluid Gauges, &c.

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Of the most reliable and approved construction manufactured and on hand at the
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And Contractor for Coal or Oil Gas-Works.

Estimates given for Gas-Works, Gas-Holders, or any Gas Apparatus.

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To Manufacturers of Petroleum Gas.

For sale, Parrish's Patent Gas and Air Mixer, adapted to all works using Petroleum or other oils, by which rich Petroleum Gas is mixed, after it leaves the holder, with a proper proportion of air, giving it the greatest illuminating power, without smoke, through any burners. The apparatus being attached to the outlet pipe, requires no alteration of the works.

Apply at the Gas-Works of St. Nicholas Hotel, No. 63 Mercer st., N. Y., where one can be seen in operation; or address D. Parrish, Jr., St. Nicholas Hotel, New York city, or No. 1416 Arch street, Philadelphia.

SAVING OF FUEL TO PARTIES USING STEAM.
DAMPER REGULATORS.

Guaranteed to effect a great saving in fuel and give the most perfect regularity of power. For sale by the subscribers, who have established their exclusive right to manufacture dan per regulators, using diaphragms or flexible vessels of any kind. CLARK'S PATENT STEAM AND FIRE REGULATOR COMPANY, No. 117 Broadway, New York.

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VALVE WATER METER,

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Is now in use by many City Water Cos, because of its low price, simplicity, durability, accuracy under any pressure, and (a great advantage) because it runs with less head than any meter used. Manufactured by H. Q. HAWLEY, Albany, N. Y.

WEST'S IMPROVED PUMPS, the most Simple, Durable, and Powerful, and the Cheapest in use.

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MANUFACTURERS OF
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Great Improvement
IN
Sewing Machines.
EMPIRE
SHUTTLE MACHINE!

Patented February 14th, 1860.

Salesroom, 536 Broadway.

This Machine is constructed on entirely new principles of mechanism, possessing many rare and valuable improvements, having been examined by the most profound experts, and pronounced to be SIMPLICITY and PERFECTION COMBINED.

It has a straight needle, perpendicular action, makes the LOCK or SHUTTLE STITCH, which will NEITHER RIP nor RAVEL, and is alike on both sides; performs perfect sewing on every description of material, from Leather to the finest Nansook Muslin, with cotton, linen, or silk thread, from the coarsest to the finest numbers.

Having neither CAM nor COG WHEEL, and the least possible friction, it runs as smooth as glass, and is

Emphatically a Noiseless Machine!

PRICE OF MACHINES,

COMPLETE:

No. 1, Family Machine, with Hemmer, Feller, Gauge, Braider, & Corder, complete. - - - $60
No. 2 Small Manufacturing, with Extension Table, $75
No. 3. Large Manufacturing, with Extension Table, $85
No 3. Large Manufacturing, for Leather, with Rolling Foot and Oil Cup, 100

One-half hour's instructions is sufficient to enable any person to work this Machine to their entire satisfaction.

Agents Wanted in all Towns in the United States, where Agents are not already established. Also, for Cuba, Mexico, Central and South America, to whom a liberal discount will be given Terms, invariably Cash on delivery.

T. J. McARTHUR & CO.,
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WIGHTMAN BROS.,

IMPORTERS AND
SOLE AGENTS
For the United States and Canada, of
SCHWARZ'S
GERMAN LAVA GAS-TIPS
And proprietors of Winchester's Improved
LAVA TIP GAS BURNERS,
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MANUFACTURER OF

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And Importer of SCOTCH TIPS,
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Mercury Cups, Portable Sockets, Burner Pillars, Burner Pliers, &c., &c.

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For Lighting and Heating Purposes.

GAS HEATING AND COOKING APPARATUS; FITTERS' ROVING APPARATUS, &c.
529 Commerce st., bet. Market & Arch, Philadelphia

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Sole Agent for the sale of
Thompson's Gas Controller
in the States of
CALIFORNIA AND OREGON,
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Carrington & Co.'s
GENERAL
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AGENCY,
In Connection with all the Expresses
No. 30 Broadway,
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Established 1854.

Purchases to order any article wanted from New York, or Europe, for ladies' or gentlemen's use or wear,---comfort or luxury,---from a cameo to a cashmer, a seal ring to a steam engine.

Goods purchased at current City prices, and forwarded by Express or as directed.

Commission, Five Per Cent

Remittances, with orders, can be made by Express if preferred, as all Express Agents will take orders, receipt for and forward funds, and see to return of Goods.

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MEXICAN & BRAZILIAN
EXPRESS.

CARRINGTON & CO.
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Express for HAVANA and ISLAND OF CUBA by regular steamships weekly.

Express for MEXICO and VERA CRUZ on the 10th and 16th of every month.

Express for ST. THOMAS, BAHIA, and RIO DE JANEIRO each month.

Packages received for United States Brazil Squadron.

Freights should be sent to our office day before sailing of steamer, with invoice, contents and value.

FINKLE & LYON'S
New Family
SEWING MACHINE
Should be known in
IN EVERY TOWN.

To accomplish this at once and save the expense of a *Travelling Agent*, we offer thus, viz:

Any one sending us orders for two machines shall receive one machine free of charge. This proposition cannot avail after we have appointed a local agent in the town.

We have now completed our *new manufacture* at a cost of some $200,000—introducing *new patents*, and such important improvements, that without fear we are able to offer the following stringent guarantee, viz: After a fair trial, if any purchaser does not prefer the FINKLE & LYON FAMILY SEWING MACHINE to any other, he can return it and have back his money.

This machine has taken many of the HIGHEST PRIZES; *is less complicated than any other first class machine; does a wider range of work without changing; requires no taking apart to clean or oil, no "lessons" to set needle, regulate tension or operate machine.*

Our new Manufacturing Machine is sold on the same terms as the Family Machine.

Please send for a circular with samples of sewing.

Finkle & Lyon S. M. Co.
No. 561 BROADWAY, NEW YORK.

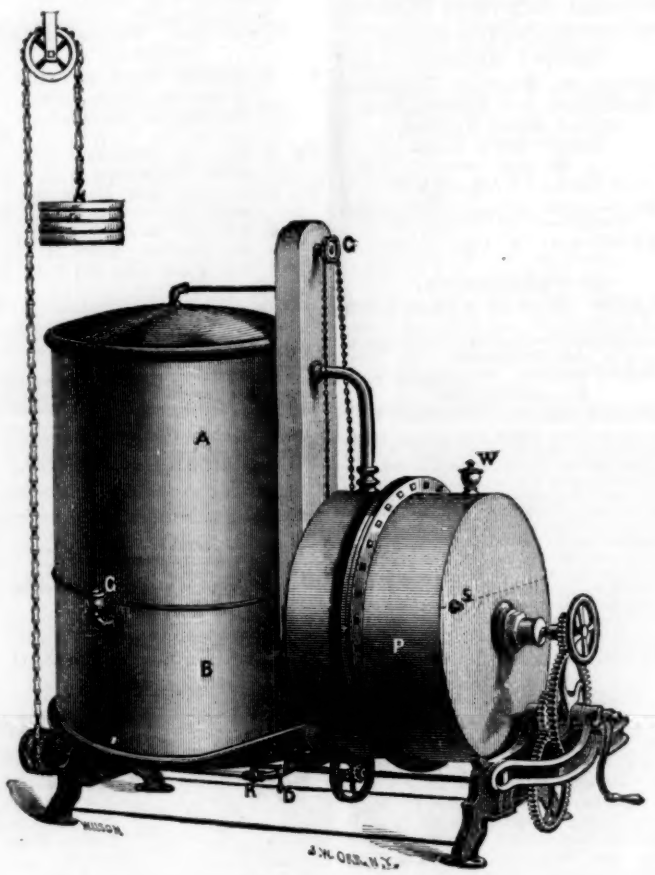
EMPIRE STATE GAS MACHINE,

LEVI STEVENS' PATENT, FOR SUPPLYING,

Dwellings. Stores, Factories and Public Buildings.

THE GAS GENERATED BY THIS MACHINE

Is a mixture of the vapor of hydro-carbon with common air. The mechanical devices employed are such as, from a long experience and critical examination into the nature of the element brought into use, seem best adapted to secure a certain and satisfactory result. GASOLINE, the liquid employed, is the more volatile portions of Petroleum, of a specific gravity of 0.6587. This liquid exposed to the action of this machine is vaporized, and a close mechanical mixture of the vapor with common air is effected. The value of the gas produced, its permanency, its illuminating quality, and freedom from liability to condensation, depend almost entirely upon the perfect and uniform character of this mixture. Hence the great importance of mechanical means adapted to secure all the conditions requisite in a Portable Gas Machine.



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(Boxed and delivered on the cars at the Manufactory.)

No. 1,	$150,00	5	Argand Burners.
do. 2,	250,00	10	do.
do. 3,	350,00	20	do.
do. 4,	450,00	35	do.
do. 5,	600,00	60	do.
do. 6,	1,000,00	125	do.
do. 7,	1,500,00	250	do.

This machine will produce the most brilliant and steady light without Fire or Heat, and is warranted to operate in every respect as represented.

The EMPIRE STATE GAS MACHINE is the most SIMPLE and EFFECTIVE MEANS KNOWN FOR PRODUCING GAS WITHOUT HEAT.

Its action is automatic, feeding itself with constant supplies of Gasoline, thus securing steady and uniform supplies of Gas. The gas produced is equal to the best known Illuminating Gas. It is as economical as any other, and is adapted to a wider range of use for Lighting, Heatin and Mechanical purposes. It will maintain its illuminating power under as great a degree of cold as any other. It is free from danger with the ordinary care in using gas. Its remarkably pure and steady light is pleasant for the eye. It renders it easy for persons living remote from street gas pipes to enjoy the luxury of a pure GAS-LIGHT, at a COMPARATIVELY SMALL COST, AND WITH LITTLE TROUBLE.

☞ The public are invited to witness its operations at our store. GASOLINE will be supplied by us, at market prices, or may be obtained from the various other sources of supply now going into operation.

MITCHELL, VANCE & Co., 620 Broadway, New York,

Manufacturers of Chandeliers and Gas Fixtures of every description. Also Chandeliers, Brackets, Lamps, &c., for Coal Oil, adapted to Churches, Public Buildings, Dwellings, &c.